

one of the objects for which the bones are hollow, namely, to diminish their weight,—the other object being to increase their strength. The author proposes to publish his views in a separate form so soon as he shall have leisure to complete certain experimental investigations that he has devised.—*Cambridge Phil. Soc.* Feb. 12, 1866.

On the Organs of Parturition in the Kangaroos.

By EDMOND ALIX.

I have lately, by the kindness of M. E. Verreaux, had the opportunity of examining the organs of parturition in a female *Halmaturus Bennettii*. This investigation has enabled me to solve a question which has long been under controversy. The organs of generation, in the female Kangaroo, consist of two ovaries, two Fallopian tubes, two uteri, and two lateral vaginae (which, after bending round in the form of loops, terminate in the urethro-genital vestibule), and a median pouch or vagina. This median vagina, to which our attention must be particularly directed, is in the form of an elongated cone. The base of the cone, turned towards the uteri, has a wide communication on each side with the lateral vaginae; its apex advances between these two passages and reaches the bottom of the urethro-genital vestibule. Home asserted (*Phil. Trans.* 1795) that there was a direct communication between the cavity of the median vagina and that of the urethro-genital vestibule, that the orifice enlarged gradually as the period of parturition approached, and that it then became capable of sufficient dilatation to allow the escape of the fœtus. Cuvier did not accept this opinion, his dissections not having shown him the orifice indicated by Home. He assumes, in consequence, that the fœtus gets into one of the lateral vaginae and passes slowly along until it is expelled. Owen (*Cycl. of Anat. and Phys.*) has confirmed Cuvier's assertions; and this opinion has been generally adopted. The object of this arrangement of the organs would be the multiplication of obstacles destined to prevent the too rapid expulsion of so delicate an embryo.

Nevertheless, if we consider the narrowness of the lateral vaginae, and especially the extreme fineness which they present at about 2 centimetres from the urethro-genital vestibule, we may be alarmed at the slowness of the passage and the violence of the pressures to which this delicate embryo would be subjected. There is no more argument in favour of the second than of the first opinion; and the observation of facts can alone teach us what is the truth.

In a preparation which I have submitted to the examination of my colleagues of the Société Philomathique, it is easy to see, upon the pubic face of the urethro-genital vestibule, immediately above the urinary meatus, a circular orifice, larger than that meatus, and folded in the manner of the anal sphincter. A sound introduced through this aperture, passes immediately into the cavity of the median vagina. This preparation furnishes incontestable evidence of the existence of the aperture denied by Cuvier and Owen, and affirmed by Home. The difference of opinion between these authors

may perhaps be due to their not having examined the same species.

The lateral vaginae present no trace of distention, and there is nothing to indicate that they have served for the passage of the foetus. They do not appear to have been of any other use than to receive the semen at the moment of copulation and to convey it to the neck of the uterus. They would thus merit the name of *spermatophorous vaginae*, whilst the median vagina would be an *embryophorous vagina*. This opinion is confirmed by an interesting fact—namely, that the median vagina is covered with a pavement-epithelium, while the lateral vaginae are clothed with a cylinder-epithelium.

From these facts it follows that the issue of the embryo does not in this case present that slowness which was ascribed to it by the opponents of Sir Everard Home; but it must not be supposed that the prevision of nature can be at fault; it has made up for this by the instinct of the mother. M. Jules Verreaux, during his residence in Australia, possessed a considerable number of Kangaroos, which he kept in confinement. By attentively watching them day and night, he succeeded in ascertaining the secret of their parturition. When the female feels that she is about to expel an embryo, she applies her two fore feet to each side of the vulva in such a manner as to separate its labia; she then introduces her muzzle into the vestibule and receives the embryo in her mouth. The fore feet are then at once removed to the margins of the marsupium in such a manner as to dilate its aperture; the head is passed into the pouch and deposits the embryo there. In a few moments it is attached to the teat. Messrs. Owen and Bennett had a suspicion of these facts; but the honour of the discovery is due to M. Jules Verreaux.—*Comptes Rendus*, January 15, 1866, pp. 146-148.

Descriptions of Twenty-one new Fishes from Port Jackson, and One from Port Natal. By Dr. F. STEINDACHNER.

Dr. Steindachner has communicated to the Vienna Academy a paper on the Fishes of Port Jackson, in which he refers to sixty-six species. He describes the following as new:—

1. *Plectropoma myriaster*.—Body and fins densely covered with small round spots; length of head contained $2\frac{7}{10}$ – $2\frac{4}{5}$ times, and depth of body 3 times, in the total length; caudal fin slightly rounded off.

D. 13/14–15; A. 3/8; L. lat. c. 100.

2. *Dules novemaculeatus*.—Dorsal with nine spines.

D. 9/10; A. 3/7–8; L. lat. 49–50.

3. *Scorpis Richardsonii*.—Profile of head concave; diameter of eye = $\frac{1}{4}$ length of head.

4. *Scorpæna Jacksoniensis*.—A milk-white spot upon and below